extension and abduction. One writer believes these fractures to be subperiosteal, but that seems likely only in exceptional cases. Another writer says "the bone gives way before the ligament." I know of no ligament directly involved.

Anatomy. The X-Ray picture in a typical automobile fracture will show a fracture line in the lower end of the radius below the usual site of a Colles' fracture. This line runs either transversely across the bone or what is more common obliquely into the joint. There is no impaction, no displacement and consequently little or no deformity. The styloid process of the ulna which is torn off in nearly 75% of Colles' fractures and but rarely detached, one author says less than 25%. I found but one in ten. The fractures show a remarkable similarity to one another. In the young epiphyseal separation is said to take place, but before ossification (eighteenth to twenty-first year) the fracture can often be seen crossing the epiphyseal line.

Clinical Features. There is as a rule no crepitus, little deformity, swelling, pain or discoloration. The loss of function also is slight, though rather greater than the other clinical symptoms would call for. Gentle motion can be made, forced ones are painful. There is a distinct point of tenderness on the lower and outer end of the radius, and this clinical sign is always present and shows in this fracture perhaps more than any other the value of pressure point tenderness in the diagnosis of fractures. The diagnosis must often be made on the history and this sign alone. An X-Ray to be taken, of course, when possible.

Treatment. Prophylaxis need not be entered into. As a rule the less done the better. Any attempt to improve the slight deformity is unnecessary; in fact, I have been told of a case where it was made worse.

Champoniere has achieved what he calls marvelous results (marvelous as against his results in Colles) by immediate reduction followed by early mobilization. Our cases all proceeded to a speedy and full functional recovery without any manipulations.

Immobilize—after a week, daily massage and motion of joint. At end of three weeks patient generally well.

I will now show a number of plates. First a number showing the typical fracture described and then others of atypical fractures and finally some due to direct force.

Discussion.

Dr. Emmet Rixford: It struck me that of the series of names of this fracture mentioned by Dr. Winterberg the last was the most appropriate, namely, the automobile-crank fracture. The etiology of these and Colles' fracture is very different, the mechanism of production of the fracture is very different as well as the deformity, the clinical course and the prognosis. We all know that the common explanation of the cause of these fractures is that they are due to blows on the back of the wrist given by the handle of the crank when the engine backfires. It is much more probable that the radius is broken in most cases by a blow producing radial flexion (abduction) combined with thrust, while Colles' fracture is the result of hyperextension. Dr. Winterberg mentioned two cases as being mine; they both gave distinct and very clear and very positive accounts of the way in which the fracture was received and both showed a very tender area in the region, especially the one in which the fracture was 3" above the joint. He was positive that the crank did not leave the hand and he certainly was bruised in the interval between the thumb and the first finger. How does that force produce the fracture? From the direction of the line of fracture it might be described as fracture of the styloid process of the radius. Some of these fractures seem as if they might be produced by excessive abduction. In the Colles' fracture there is no such abduction and the line of the fracture is certainly different in the two cases. In the Colles' fracture the flexion starts the tear on the volor surface. In the case of Dr. Schmoll's wrist cited by Dr. Winterberg there was a very considerable dorsal displacement and we thought the final form of the arm was better for having had some manipulative reduction. In one or two other cases I have seen slight dorsal flexion at the point of fracture; still the dorsal displacement is much less in the automobile-crank fracture than in Colles' fracture.

Dr. W. H. Winterberg: The power of these machines is terrific. In one case the patient told me that when the crank reversed he was thrown over the mudguard of the machine, and it is remarkable that more damage is not done. The point I want to make is that so many of these fractures are trivial. In the literature the great majority of these cases are of the type that I have described and shown here. Dr. Rixford spoke of one case in which there was considerable deformity; in that case both bones were broken. In the cases of the usual type there is little or no deformity.

THE LIPOIDS OF NORMAL, NEPHRITIC AND DIABETIC SERUM: PRELIMINARY REPORT.

By CLARENCE QUINAN, M. D., San Francisco.

Very little attention has been paid to the chemistry of the blood in chronic disorders of the kidneys, although there can be no doubt that a peculiar and at times very remarkable turbidity of the serum is characteristic of nephritis. An extended chemical study of many specimens of this serum has made it evident that the altered appearance is due to an absolute increase in certain of the fatty or lipoid constituents. It will be seen, by consulting the tabular data included herewith, that, comparatively speaking, the lipoid value is a large one and that it ranges within wide limits. From the practical standpoint the examination for lipoids, fortunately, is one that presents no great difficulties, and with a little experience it is easy to obtain concordant results in duplicate analyses. Usually, no trouble is experienced in distinguishing several different lipoids in any given serum, and the relative proportions of these perhaps vary in some diseases. In nephritis a cholesterin ester predominates. There is, therefore, some ground for the belief that both the quantitative and qualitative relations of a group of bodies so obviously important, should possess clinical significance.

The main objects sought in the present paper are to outline what is believed to be a new method for the quantitative determination of these obscure substances, and to submit the data obtained in the study of three different groups of cases comprising in all thirty individuals.

By various modes of extraction lipoids can be ob-

Table I. Normal Serum.

Values obtained by direct extraction of the insoluble Globulin thrown out of solution by CO_2.

[Dilution 1-100]

No.	Urine	Alb. P.m.	Sug. %	Serum	Bled After Eating hours.	Acetone Extract %	Abs. Alc. Extract %	Total Lipoids %	Cholesterin present.	Clinical Notes
1	Normal	–	–	Amber-color clear	6	0.95	0.20	1.15	yes	Man 42 years old. 6 ft 2" tall. weighed 200 lbs Vigorous constitution. Health perfect
2	"	–	–	"	5	0.50	0.45	0.95	yes	Man 39 years old. (Police officer) 6 ft 3" tall, weighed 250 lbs. Athletic habits. Healthy
3	"	–	–	"	4½	0.60	0.25	0.85	yes	Boy 18 years old Good health, but not vigorous
4	"	–	–	"	3	0.70	0.35	1.05	yes	Man 40 years old. 6 ft tall, weighed 190 lbs Energetic and healthy
5	"	–	–	"	5	0.65	0.40	1.05	yes	Man 40 years old 6 ft tall, weighed 195 lbs Very athletic. In perfect health
6	"	–	–	"	4	0.60	0.35	0.95	yes	Man 35 years old 6 ft. 1" weighed 200 lbs In vigorous health
	Average					0.66	0.33	1.00		

tained from serum. A very satisfactory plan, for example, and one which has been employed in a large number of experiments, in the course of this work, is to incorporate the fresh serum with calcined kieselguhr before proceeding to extract it in Soxhlet's apparatus. The resulting mixture is a dry powder in which the watery part of the serum is firmly held whilst there is no hindrance to the free passage of an ethereal solvent. In the order of their efficiency, from that which dissolves the least amount to that which dissolves the greatest, it has been found that the solvents rank in the following order, namely, chloroform, ether, acetone and absolute alcohol. One may also obtain lipoids in considerable quantity by adding serum directly to an excess of acetone or other solvent. By none of these procedures, however, is the yield as large as that obtained by the method about to be described, which depends upon the fact that the insoluble globulin precipitated by carbon dioxide invariably contains lipoids. One can readily extract these fatty bodies from the globulin by means of proper solvents, and it is probable that the figure obtained in this way nearly represents the total lipoids of the serum.

Method.

One cubic centimeter of serum is brought into a beaker of at least 200 cc. capacity, and diluted with 100 cc. of distilled water. Carbon dioxide, purified in the usual way, is then led into the solution, and allowed to pass through it until saturated. After this treatment, the solution is covered and set aside for twelve hours. In most cases the globulin cloud appears quickly, and reaches the maximum density after the gas has acted but a few moments. In striking contrast to this behavior, however, one occasionally observes, especially in milky sera, that the globulin separates out and then partly dissolves in an excess of the reagent. In this event, after some time re-precipitation takes place, but it is interesting to note that it always begins at the free surface of the solution. Obviously, such a system is exceedingly sensitive. And it is evident that the physical status of the lipo-globulin is intimately dependent upon optimal concentration. This phenomenon does not alter the end result of the experiment.

Filtration. Schleicher and Schull's black label filter paper, 9 cm. in diameter, number 589, is very satisfactory. Of this paper two thicknesses are necessary. As a rule, a large part of the precipitate passes through the doubled paper at the first attempt to filter the solution, and one must repeat the process from five to eight times before a perfect filtrate is obtained. The filtrate should be absolutely bright and limpid. In every instance, failure to obtain this result means faulty technic. At times the lipo-globulin precipitate appears to be quite unstable and to oxidize when too long exposed to the air. When this occurs it is very difficult to retain the precipitate, and filtration may become impossible. To avoid this source of trouble, therefore, the operation must be carried out without interruption.

Extraction. When the filtration is completed, and without attempting to wash out the small quantity of solution retained by the paper, the moist filter is carefully removed from the funnel, and with sharp scissors is snipped into a large beaker. Seventy-five cc. of chemically pure acetone are added, and the contents of the beaker are heated on the water-bath until the acetone boils gently. The hot solution is then decanted into a distillation flask through a filter. Successive portions of acetone must be used until the globulin is exhausted. For this purpose from 150 to 175 cc. are required. The acetone is now distilled off until about 10 cc. remain in the flask. This small remaining portion is decanted into a tared vessel, the flask is rinsed sev-

Table II. Parenchymatous Nephritis.

Values obtained by direct extraction of the insoluble Globulin thrown out of solution by CO_2.

[Dilution 1-100]

No.	Urine	Alb. p.m.	Sug. %	Serum	Bled After Eating hours.	Acetone Extract %	Abs. Alc. Extract %	Total Lipoids %	Cholesterin Present	Clinical Notes
1	Sp. gr. 1024 Granular casts	hvy. Tr.	–	Greenish-yellow very turbid.	5	1.70	0.40	2.10	yes	Man, 35 years old. Muddy complexion. No dropsy. Gastro-intestinal disturbances
2	very large number coarsely granular casts	2.5	–	Milk-white opaque	6	1.98	0.70	2.65	yes	Man 34 years old. Massive oedema 6 months ago. Feet swell towards night.
3	Many coarsely granular casts	hvy Tr.	–	Slightly turbid very abundant	5	1.25	0.20	1.45	yes	Man, 46 years old. Moderate dropsy Gastro-intestinal disturbances
4	many coarsely granular casts	v hvy. Tr.	–	Milk-white opaque	5	2.20	0.40	2.60	yes	Man 42 years old. Massive oedema until recently. Heart relatively negative.
5	Coarsely granular casts	2.0	–	Slightly turbid	5	1.30	0.15	1.45	yes	woman 35 years old. Large. Feet swell towards night.
6	Coarsely granular casts	hvy. Tr.	–	Slightly turbid	2	1.20	0.15	1.35	yes	Man, 50 years old. Short + stout. Mitral regurg., Slight dropsy.
7	Coarsely granular casts	hvy Tr.	–	Slightly turbid	3	1.10	0.20	1.30	yes	Woman 65 years old. Moderate dropsy. Right hemiplegia 5 years ago.
8	Granular casts Many with other epithelium cells	v hvy Tr.	–	Cherry-red Free haemoglobin	2	1.55	0.20	1.75	yes	Man, colored, 30 years old. No dropsy. Heart relatively negative
9	Many granular casts.	hvy Tr.	–	Turbid.	2½	1.20	0.30	1.50	yes	Man, 76 years old. General anasarca. Legs enormously swollen. Very anaemic. Leteroid.
10	Sp. gr 1.030 Granular casts	Tr.	4.5	very turbid	3	1.85	0.30	2.15	yes	Man 50 years old. Moderate carbohydrate limitation (See also Table III)
11	Sp. gr 1.038 Granular casts.	hvy Tr.	8.30	Amber-colored clear	3	1.60	0.45	2.05	yes	Girl 17 years old. (See Table III)
12	Very many Granular Casts	v. hvy Tr.	–	Very turbid	3	1.40	0.35	1.75	yes	Woman 42 years old. Nephritis of long standing. Tissues pale + flabby. Dropsy.
13	Many coarsely granular casts	v. hvy. Tr.	–	Slightly turbid	3	1.10	0.30	1.40	yes	Woman 48 years old. No dropsy
14	No casts seen Sp. gr 1.022	Tr	–	Very turbid	5	0.90	0.65	1.55	yes	Man 35 years old. Severe furunculosis Autogenous vaccines not effective
15	Large number granular casts	v. hvy Tr.	–	Very turbid	3	1.30	0.50	1.80	yes	Man 38 years old. Acute nephritis following 2 injections of Salvarsan.
16	Nodata available			Very-turbid	4	0.80	0.60	1.40	yes	Woman 26 years old. Syphilis. 5 injections of Salvarsan. (Compare with #15)
17	Large number hyaline and granular	0.30	–	Turbid	2	1.05	0.30	1.35	yes	Woman 27 years old. Mitral regurgitation. Dropsy 8 months; improved by rest.
18	Many coarsely granular casts	0.10	–	Turbid	6	1.40	0.45	1.85	yes	Woman 35 years old. Arthritis deformans. Legs pit deeply on pressure
	Average					1.38	0.36	1.74		

eral times with a few cubic centimeters of acetone, and, finally, the tared vessel, preferably, a small Erlenmeyer flask, is heated on the water-bath until the volatile contents are driven off and its weight becomes constant. For practical purposes, the small error introduced by the presence of traces of serum proteins in the unwashed filter, is negligible.

Absolute Alcohol. The filter fragments and globulin remaining from the acetone extraction still contain lipoids which though insoluble in acetone are readily taken up by absolute alcohol. As in the case of acetone, it is best to conduct the extraction at the boiling point. About 75 cc. of absolute alcohol are required. The alcoholic extract is distilled and the residue is dried to constant weight at 100° Centigrade.

The acetone extract is an amber-colored oil. At first it is perfectly clear, but after several weeks it becomes slightly opaque. It has a faint and not unpleasant odor suggestive of an ester. Besides traces of a clear oil, absolute alcohol extracts a whitish opaque substance which adheres firmly to the walls of the containing vessel.

The 1-100 solution of normal serum is practi-

Table III. Diabetes Mellitus.

Values obtained by direct extraction of the insoluble Globulin thrown out of solution by CO_2.

[Dilution 1-100]

No.	Urine	Alb. P.m.	Sug. %	Serum	Bled After Eating hours	Acetone Extract %	Abs. Alc. Extract %	Total Lipoids	Cholesterin Present.	Clinical Notes.
1	Sediment negative	Tr	Tr.	Amber-color clear.	3	0.70	0.45	1.15	yes	Man 46 years old. Looks and feels well. Moderate Starch Limitation. Mild case.
2	1.030. Sp. Gr. Granular casts.	Tr	4.5	Turbid Greenish-yellow.	3	1.85	0.30	2.15	yes	Man 50 years old. Severe case. very little starch.
3	Sediment negative	–	2.5	Amber-color clear	3	1.05	0.10	1.15	yes	Man 39 years old. Vigorous young laborer Fractured leg. Feels well. Mild case
4	Sediment negative	Tr	0.21	Amber-color clear	3½	0.60	0.20	0.80	yes	Woman 65 years old. Weighed 205 lbs. Looks & feels well. Mild case
5	Sediment negative	Tr.	1.85	Amber-color clear	3½	0.80	0.15	0.95	yes	Woman 52 years old. Weighed 180 lbs. Looks and feels well Mild case
6	Coarsely granular casts	hvy. Tr.	8.30	Amber color clear	3	1.60	0.45	2.05	yes	Girl 17 years old. Furunculosis. Diabetes of most severe form.
7	Many granular casts	hvy Tr.	++ not det.	Slightly turbid	4	1.10	0.30	1.40	yes	Woman 46 years old General health good Slight nephritis, no dropsy
8	Sediment negative	–	4.	Slightly turbid	3½	0.90	0.15	1.05	yes	Man 60 years old. Severest form coma Bled 2 hours before death (in coma)
	Average					1.07	0.26	1.33		

cally clear. Carbon dioxide precipitates from it a very fine, diffuse cloud of globulin which shows little tendency to subside. Commonly, at the end of 12 hours it is still partly suspended, though one can then see a clear zone near the free surface of the solution. The yield of lipoid from this attenuated cloud of globulin and the trace of deposit on the floor of the beaker, is surprisingly large.

The individuals selected for the normal series were perfectly healthy. With two exceptions the lipoid value obtained was nearly one per cent.; that is, one decigramme of lipoids to one cubic centimeter of the original serum. This probably is about the normal average.

In well marked cases of nephritis it seems to be characteristic that the serum separates very quickly, and that, upon the whole, it is more abundant in quantity than in normal blood.

The lipemia varies considerably in degree. In an average case the serum is diffusely turbid. A pale, opalescent fluid, best observed by transmitted light. But in a series of cases one encounters every grade of cloudiness, from that barely perceptible, to a downright milky opacity. As a rule, it has been found that turbid serum may be taken to indicate albuminuria, though the amount of albumen in the urine is not proportional to the lipemia. For example, in the two individuals, numbers 2 and 4, Table 2, whose sera were equally white and opaque, the albuminuria was widely different; in one, the albumen reached 13 per mille at times, and was always present in large quantity; in the other, in marked contra-distinction, it never exceeded a very heavy trace. Strict parellelism between lipemia and albuminuria, therefore, does not exist.

In every serum examined in the course of this work, over fifty in all, cholesterin could be detected. It was not estimated quantitatively. But, if one judges by qualitative evidence alone—that is, other things being equal, the relative intensity of the color reaction—there can be no doubt that a cholesterin ester is present in increased amount in nephritic serum. Chauffard, Laroche and Grigaut (le taux de la cholestérinémie au cours des cardiopathies chroniques et des néphrites. *C. r. Soc. Biol.*, 70, 108, 1911) have already called attention to this. In six uremic patients examined by them the cholesterin value was very high. They assert, also, that in nine individuals with uncompensated heart conditions and edema, the cholesterin content of the blood was normal. In a tenth patient, on the contrary, with kidney phenomena, marked cholesterinemia was found.

In support of the former observation, a single case may be cited. A man, forty-eight years of age, was seen in the stage of broken compensation. There were present the usual evidences of mitral incompetency, together with albuminuria, casts and other signs of a concomitant nephritis. Massive edema was a threatening symptom. The blood-serum was found to be normal in appearance, and the lipoid value was only slightly over one per cent. From this finding it was inferred that the kidney disorder was probably functional in character. And this view was justified by the later clinical developments.

Further investigations no doubt will make it clear whether this differentiation is of practical value. It seems not unlikely, however, that the total lipoid figure, since it includes that of the cholesterin bodies, may render good service in the discrimination of a cardiac from a renal edema type. In severe edema-

tous states, then, a clear serum and normal lipoid number would point to the mechanical factor as the more important. Conversely, a definite lipemia under such conditions would point to organic disease of the kidneys.

In view of the well-known fact that lipemia has been frequently observed in diabetes, it was natural to expect an increased amount of lipoids in those patients, especially, who, at the same time, had symptoms of nephritis. Observations upon a very limited material tend to confirm this assumption. Out of eight diabetic patients examined, the only high values noted were in those individuals who had at the same time characteristic symptoms of nephritis. In no one of these eight patients, however, was a true lipemia present in the sense in which that condition is ordinarily understood. And in five patients the lipoid numbers were practically normal. This finding, that the lipoids are not increased in diabetes in a majority of cases, is entirely in accord with the results of continental workers. Klemperer and Umber (*Zeit. f. klin. Med.*, 65, 340, 1908), for example, who examined ten diabetics with reference to the fats present in the blood-serum, state that nine had acidosis but no lipemia. According to them, "Koma mit Azidosis kann tötlich verlaufen ohne dass Lipämie dazu kommt, dagegen ist Lipämie stets mit Azidosis vergesellschaftet." Adler (*Berl. klin. Woch.*, Aug., 1909), and also Klemperer (*Zeit. f. klin. Med.*, 61, 145, 1907), have discussed the relative importance of cholesterin and lecithin esters. The latter author found them present in excess, and concluded for that reason that the lipemia could not be explained by simple fat transport as the subcutaneous and mesenteric fats do not contain much cholesterin.

Conclusions.

1. In chronic nephritis, the group of globulins thrown down by carbon dioxide is markedly increased.
2. This globulin always contains lipoids and yields them to organic solvents.
3. In normal serum the lipoid value ranges from 0.85 to 1.15%.
4. In chronic parenchymatous nephritis the total lipoids are increased and the serum may contain 2.60%.

ANNUAL MEETING

—of the—

STATE SOCIETY

April 16th, 17th and 18th, 1912

HOTEL DEL MONTE

ARE YOU GOING?

SAN FRANCISCO COUNTY—

Committee on Necrology Report.

With the passing of the year death has claimed six of our members. Instead of having a line or two appear in the State Journal at the time of their decease, we have preferred to present for this report photographs of our departed members with biographical data attached thereto, all of which we intend to publish in the February issue of the State Journal.

Dr. Tullio A. Rottanzi died on the twentieth of January, 1911. He had been suffering from broncho-pneumonia when suddenly a thrombus of the right coronary artery terminated his life.

His death was premature, for, having been born on the 27th of April, 1867, he failed to attain the age of forty-four years. But short though his life was, it was full and varied. He was born in San Francisco, the son of a physician who had immigrated from Switzerland. After graduating from the Lowell High School he began the study of medicine at the Cooper Medical College, where he completed the prescribed course in 1887, before he was twenty-one years old. This precocity enabled him to extend his studies and to acquaint

himself with the world before he entered upon practice in 1890. For two years he sojourned in Mexico. In the pursuit of additional knowledge later in his career he spent a year at the clinics of France and Italy. Without intermission of his professional labors he served the public in San Francisco with great distinction as Supervisor during 1897 and 1898. Again in 1904 he devoted himself to the welfare of the municipality as City Physician and continued in that office for nearly four years. To the need of the Nation he responded during the war with Spain by enlisting in the